DECLARATION BY DR. VICTOR L. ANDREWS TO THE FEDERAL COMMUNICATIONS COMMISSION IN SUPPORT OF A PETITION BY CITIZENS UTILITIES COMPANY

Andrews Financial Associates, Inc.

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Declaration by Dr. Victor L. Andrews to
the Federal Communications Commission in
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INTRODUCTION

My name is Dr. Victor L. Andrews. I was asked by Citizens Utilities Company on behalf of its local exchange company subsidiary to submit a *Declaration* to the FCC in support of its petition for reconsideration of the FCC's *Fourth Report and Order* in CC Docket No. 94-1 and *Second Report and Order* in CC Docket No. 96-262, the "Price Cap Order" ("PCO") adopted May 7, 1997 and released May 21, 1997. This is my *Declaration*.

My personal resume is attached. Briefly, I am Chairman Emeritus and Professor Emeritus of the Department of Finance, College of Business Administration, Georgia State University. For 11 years ending in 1993 I was also Director of the Center for the Study of Regulated Industry in that Department. As a consultant, I continue as Chairman of its CFO RoundTable. I am President of Andrews Financial Associates, Inc., consultants in financial and economic matters. Also, I am an independent Director on the Board of Directors of several families of mutual funds.

Among other things, I have testified on behalf of various utilities and regulatory organizations in telecommunications, natural gas, and electric power in the U.S. and Canada over a considerable number of years. All told, I have filed testimony in 13 state jurisdictions in the U.S., on behalf of the Ontario Energy Board, the AGT telephone company in Alberta, and with the Radio-

television and Telecommunications Commission in Canada. With regard to incentive regulation, in 1990 I submitted a statement at the request of GTE Service Corporation to the FCC in Docket Nos. 87-313 and 89-624. In 1993, I testified on behalf of Citizens Utilities Company of California in *Proceedings to Implement A New Regulatory Framework Before the California Public Utilities Commission (Application 93-12-005)*. Among many related considerations, my testimony in that docket directed comment at the role of productivity in telecommunications, its measurement, and the "X-Factor" specific to California.

This *Declaration* argues that some features of the PCO are incompletely considered. Worse, some aspects of the PCO are arguably ill-fitted to achieve the Commission's stated goal "to further the new pro-competitive, deregulatory paradigm set out in the Telecommunications Act of 1996." Specifically, I point to the disparate economic results of fixing a single industry-wide X-Factor. The total factor productivity ("TFP") analysis by the Commission's Staff underlies the entire PCO. It relied upon a data set related only to the seven Regional Bell Operating Companies ("RBOCs" or "BOCs"). Thus, the results, notably the TFP findings, are wholly particular to the RBOCs. While the RBOCs do indeed conduct a very sizable part of the nation's local exchange business, they differ markedly in markets and company economics from mid-size and small local exchange carriers ("LECs"). The difference is most acute with regard to the rural-service LECs. The PCO effectively would transfer results from RBOC data to the dissimi-

lar circumstances of rural LECs. This highlights a question as to whether or not geographically segmented and economically and demographically very diverse telecommunications markets can sustain local exchange companies laboring under a single alleged norm of TFP. The choice to employ a single X-Factor implicitly presumes a homogeneity of markets and LEC servers that simply does not exist.

As I will show, the productivity measured by the BOC-specific Staff study is composed much more of gain from growing traffic quantities, conspicuously interstate calling, than it is from favorable input behavior. Together, traffic growth and changed output mix are several times as large in numerical effect as that of input quantities in the Staff study's decade-long measure of TFP. The Staff study found that growth in interstate traffic was a prime cause in achievement of significant BOC productivity rise. There is little to doubt on this score. However, smaller LECs have geography and customer mixes dissimilar to the RBOCs. They can hardly be expected to experience the same growth of interstate traffic and resulting productivity.

To forestall possible misimpression, I endorse the spirit and intent of incentive regulation. Additionally, this *Declaration* is not a technical critique *per se*. Reference to TFP analysis is simply the largest gear in logic about the probable functioning of the PCO's single X-Factor.

Curiously, the PCO confined itself to a next step beyond the FCC's interim plan, but the PCO's underlying research, on the oth-

er hand, tells us much, much more. The FCC owes it to itself and to the LEC industry to rethink the implications of the Staff's research.

THE PRICE CAP MECHANISM AND THE X-FACTOR'S ROLE

While the implementation of the price cap mechanism is complex, it is not difficult to state. The LECs' interstate access services are grouped into four parts (or baskets). In the words of the PCO (Paragraph 7) "A price cap index (PCI) limits the weighted average of rate increases for each basket to the rate of inflation minus an `X-Factor.'" In a nutshell, if inflation and the X-Factor are measured in terms of rate of change:

$$PCI = Inflation - X.$$

The gut of the X-Factor is the excess of the rate of productivity increase among the LECs over the economy-wide rate. However, within the X-Factor, the PCO also incorporates an input price differential and an arbitrarily fixed .5% Consumer Productivity Dividend (CPD). This *Declaration* lays aside the CPD.

Letting P stand for productivity, I for level of input prices, and subscripts L and E for LEC and economy-wide, respectively, the ingredients of the X-Factor become:

$$X = (P_L - P_E) + (I_E - I_L)$$

The X-Factor is aptly captioned the price/productivity differential in Column G of Chart D1 in Appendix D of the PCO. Productivity of the LECs is rate of physical output growth less the rate of physical input growth: $P_L = P_o - P_i$. Using figures for 1995 from the Staff study:

$$P_L = P_o - P_i$$
$$P_L = 5.69\% - .49\% = 5.20\%$$

The rate of productivity growth in the U.S. Nonfarm Business Sector in 1995 was .16%. The excess of LEC productivity growth over the economy-wide rate, therefore, was:

$$P_L - P_E = (P_o - P_i) - P_E$$
$$P_L - P_E = (5.69\% - .49\%) - .16\% = 5.04\%$$

In 1995 the economy-wide input price rise, I_E, and the LEC input price rise, I_L, were 3.09% and 1.31%. The input price differential, therefore, was;

$$I_E - I_L = 3.09\% - 1.31\% = 1.78\%$$

Overall, the ingredients for calculation of the X-Factor in 1995 were:

$$X = (P_L - P_E) + (I_E - I_L)$$
$$X = 5.04\% + 1.78\% = 6.82\%$$

Without excluding input price issues, this *Declaration* will emphasize TFP components, to wit, physical output gain less physical input increase: $P_L = P_o - P_i$

COMPOSITION OF PRICE/PRODUCTIVITY GAINS

A close look tells us that the empirical result of the FCC Staff's measures of BOC price/productivity experience was, so to speak, a recipe of two-fifths input prices and three-fifths LEC productivity. The PCO (Paragraph 9, p.7) recalls "total factor productivity is the ratio of a firm's...total output to its total input...In TFP calculations, output and input are represented by indices." Even if simple, in the case of RBOCs history this is a real mouthful.

The following is taken verbatim from Chart D1 in Appendix D of the PCO:

Input Price Growth Rates [Average 1986-95]		
Col A Total RBOCs	.87%	
Col B U.S. Nonfarm Business Sector	3.07%	
Col C = B-A Differential		2.20%
Total Factor Productivity Growth Rates [Average 1986-95]		
Col D Total RBOCs	3.20%	
Col E U.S. Nonfarm Business Sector	.17%	
Col F = D-E Differential		3.03%
Col G = C+F Price/Productivity Differential [Average 1986-95]		5.23%

Stated in summary terms, of the 5.23 percentage point price/productivity differential as between the seven RBOCs and the U.S. Nonfarm Business Sector, 2.20 percentage points trace back to lower rates of input price rise of the RBOCs. Clearly, this is a material part of the X-Factor's combined components, but it is much less clear that it is a variable controllable by a LEC. Is it a managerial lever? I cannot think so or certainly cannot believe it to be so in significant degree. It is an open question whether or not incidence of input price change is neutral across LECs. There is no *a priori* reason to presume so. Indeed, there is reason to presume the contrary. On its face, buying power of the BOCs is greater than that of the small LECs. Waiving this point, expenses, particularly labor, are simply not uniform across regions. Can managements of individual companies be responsible for this type of disparity in input costs? To me, it seems that to ask the question is to give the answer, "no."

A paradoxical point can be found in the simple figures shown above. Putting the point colloquially, the more poorly the economy overall performs with respect to productivity gains, the tougher is the X-Factor for the LECs. Recall that the TFP growth rate is the net difference of RBOC productivity gain over that of the economy. Suppose we contrast the historical with a hypothetical gain of, say, 1% per year.

	1986-95	Hypothetical
TFP Growth Rate		
RBOCs	3.20%	3.20%
Less:		
U.S. Nonfarm Business Sector	.17%	1.00%
Differential	3.03%	2.20%

The example shows that the higher is economy-wide productivity gain, the lower is the TFP differential gain, and the lower will be the X-Factor hurdle for the LECs. Conversely, however, as history is opposed to the hypothetical, the lower is the economy-wide productivity rise, the higher will be the TFP and the higher will be the resulting X-Factor, i.e., the LECs' hurdle. Inspection of Column E, Chart D1 in the Appendix of the PCO shows, to make the point empirically, that gain in U.S. Nonfarm Business Sector productivity was *negative* in four years out of ten and above 1% in a single year in the 1986-95 period. This biased the X-Factor upward. Going forward, the PCI mechanism has the effect of holding management responsible for indifferent economy-wide productivity performance.

Even more startling is the makeup of the RBOC TFP figure. We

may piece together the average rate of output growth for, say, 1986-95 and the average rate of input growth for the same period.

Chart D5:	
Avg Index of Output Growth Rate 1986-95	4.64%
Chart D11:	
Less: Avg Index of Input Growth Rate 1986-95	1.44%
Chart 1 TFP Growth Rate, Total RBOCs 1986-95	3.20%

This tells us that it was output growth, not input control, that dominated gain in productivity. Put differently, growth in the product market was a critical support to what we are pleased to call "productivity."

The role of product markets is also suggested, perhaps eloquently, by Chart D5 in Appendix D of the PCO where revenue shares and quantities of local service, intrastate toll/access and interstate service are shown. In brief, the index of interstate output stood at 1.00 in 1985 and 2.41 in 1995. Gain in number of local calls and intrastate dial equipment minutes paled in contrast. In short, large generators of interstate traffic were the core of a RBOCs' "productivity" gain. The prominence of the effect of demand-pull by growth of long distance calling can hardly be exaggerated.

In the *Price Cap Fourth Notice* the FCC debated with itself about the merits of multiple X-Factors in recognition of, among other things, differences as between LECs. The crucial role of market access to the surging growth of long distance calling confirms the merit of the FCC's earlier inclinations. Consider the following reinforcement of the point about interstate traffic.

In March, 1997 the Industry Analysis Division of the FCC's Common Carrier Bureau published *Trends in Telephone Service*. With regard to some of the data gathered in Table 23 covering 1980-95 it remarked (p. 33):

> "The volume of local calling has grown at approximately the same rate as the number of local telephone lines. In contrast, the volume of long distance calling [has] surged as prices fell. As a result, a greater portion of calls are [now] long distance. Intrastate toll minutes increased from 8% of all minutes in 1980 to 11% in 1995. During that same period, interstate calling minutes increased from 8% of the total to 15%."

To much the same effect the same document also said:

> "Increases in long distance calling have caused the total usage per line to increase from 46 minutes in 1980 to 52 minutes in 1995."

THE PRICE CAP MECHANISM AND THE COMPETITIVE MODEL

In the economist's picture of a perfectly competitive single-product industry in which all firms enjoy the same cost functions, output price is pulled downward toward industry-wide long-run average cost. If production cost falls as a result of declining input prices or improved technique (gain in productivity), equilibrium output price will be pulled downward toward the new long-run average cost. Effectively, this passes productivity gains to the buyers in lower prices. If product markets were uniform and if least-cost technology and input factors were uniformly employable, the FCC's price cap mechanism should give this result to long distance access in a surrogative way. Presumably, in the

attempt to surpass the X-Factor, individual service providers would implement cost reductions to the maximum extent possible. As a companion piece, the achievement of broad, high-intensity competition in delivery of the LECs' services would ultimately sustain deregulation.

In reality, however, we bear in mind the diversity of markets served by the LECs. Some are economically and demographically vigorous and mature, some are not. Appetites for different services on the LEC menu of offerings are heterogeneous as between service areas. Density is quite disparate as between urban and rural markets. In short, some LECs serve low-cost, high-return markets, and some face very different conditions indeed. Markets exert force of their own over service providers, including, as it turns out, coaxing out or repressing unusual productivity gains. If a regulatory regime is to be successful in transition to deregulation and unregulated competition, perforce it must employ an incentive system that will allow LECs to earn reasonably comparable returns from greatly heterogeneous product markets.

In more explicit but narrower terms from Economics, markets for the LECs are segmented, partly by the hand of the regulatory past and partly by geography and its accompanying human and business demography. Costs of servicing these disparate product markets necessarily differ. If revenue and cost functions differ in segmented markets, it is much the better part of reason to believe that the pro-competitive goals of the FCC's price cap regulation should recognize and accommodate different current levels of LEC

productivity and differing rates of gain in productivity. A single X-Factor in the face of greatly diverse LEC economics is neither intrinsically fair nor pro-competitive.

THE PRICE CAP ORDER VERSUS THE INTERIM PLAN

It is useful to remind ourselves of the contrast of the PCO with the interim plan prevailing heretofore. The following is a capsule of X-Factors and sharing requirements under the interim plan and the PCO.

	X-Factor	Sharing
Interim Plan		
	(1) 5.3%	None
	(2) 4.7%	(a) 50% for earnings 12¼% - 16¼% ROE (b) 100% for earnings above 16¼% ROE
	(3) 4.0%	(a) 50% for earnings 12¼% - 13¼% ROE (b) 100% for earnings above 13¼% ROE
Price Cap Order	6.5%	None

If a service provider achieves productivity gain in excess of the X-Factor, the excess becomes increased profit at a given level of prices. Vice versa is true. Put another way, a service provider retains the excess of its achieved productivity/price gain over the X-Factor but it loses any shortfall. Under the interim plan, choice of an X-Factor with sharing lowers the hurdle bar at the cost of sharing higher realized productivity gains with ratepayers. The PCO states one X-Factor only and eliminates sharing. There is no room for choice as between risk and return under the PCO even if the shoe does not fit the LEC. The poten-

tial for economic and financial injury is obvious.

THE PCO's ANALYSIS OF TOTAL FACTOR PRODUCTIVITY

Measuring "productivity" is tantamount to measuring the relationship (ratio) of output to input. All TFP's employ indexation in measuring outputs and inputs. Differences as between TFP approaches in this task have to do with (1) identifying outputs, measuring, and weighting them, and (2) defining factor inputs, measuring, and weighting them. To be sure, complexities in implementation provide abundant ground for differences as between analysts. In our endeavor, however, questions relate to whether or not the methodology of the PCO's TFP is neutral across the LEC industry and with consequent pro-competitive results in segmented markets.

After careful examination, we conclude in the negative: The PCO's measured productivity appears to be rooted overwhelmingly in the robust product markets of the BOCs. No evidence has been offered about neutrality of input price experience across LECs.

By itself, the FCC Staff study's TFP analysis of output growth paints a tell-tale picture of underlying LEC product markets. Charts D4 and D5 of Appendix D of the PCO are a focal point. In briefest sum, output indices in Chart D5 are constructed by weighting quantities of services by their respective revenue shares. Product categories are (1) the number of local calls, (2) intrastate toll/access calls measured by dial equipment minutes, and (3) interstate services consisting of end user access lines, switched access minutes, and special access lines. Inter-

state services are measured by their own sub-index of output. In turn, that index is blended with measures of local and intrastate services.

By itself the sub-index of interstate output is interesting and revealing in some dimensions. Reflection in some way of the advent of the Subscriber Line Charge ("SLC") among interstate traffic revenues was inevitable. In the Staff study it took the form of "End User Common Line revenue." It serves as the weight attached to access lines as one quantity within the overall index of interstate output. This weight grew from 10.44% to virtually one-third of total interstate traffic revenues in the ten years following 1985.

Special access lines and switched access minutes were the other two physical elements of interstate quantities. The former grew an astonishing thirteen-fold over the ten years of the Staff study. Switched access minutes more than doubled but their revenue share fell from almost 76% to 53% of the total at the same time. These dramatic changes in elements of mix of interstate service overall, however, took place beneath the overall sizable gain of the BOCs in interstate output and productivity.

Chart D5: Calculation of Fisher Ideal Index for Total Company Output is implicitly emphatic to the same effect.

1. The rise of quantity of interstate services in output mix was startling: the Staff's estimates produced an index rise of 241% in 10 years. Local and intrastate quantity gains lagged far behind.

2. One can compute the weighted quantity relatives of component services within the Staff's output index as shown in Chart D5. Both the Laspeyres and Paasche elements show the quantity growth of interstate services to have been very materially influential over growth reflected in the total output index. To emphasize, this growth was on the physical output side. Change in revenue share was comparatively insignificant.

There is no avoiding the point that output mix exerted its own distinctive influence over productivity by the BOCs. However, product mix is ***at most*** only a partially manageable variable for a franchised utility. The BOCs' territories include large urban areas with concentration of business customers heavily reliant upon long distance calling. Rural LECs serve areas without such large generators of interstate calling. The FCC should have accounted for this simple contrast. In not doing so it flawed the PCO.

The Commission's Staff divided factor inputs into labor, materials, and capital. Although there are perennial bones of contention as between practicing index economists regarding the handling of estimates of labor and materials consumption, we bypass them here. That is *not* to say analysis of or dispute about them has no merit. Within the purpose of this *Declaration,* though, chronically recurring differences about the handling of capital cost are the most problematic. Additionally, capital costs overshadow the other two in proportion to the total. It is likely that dissimilarity between LECs in reliance on capital in-

puts is the farthest reaching in productivity effects.

The core difference across LECs with regard to capital costs is their capital/output (i.e., plant/revenue) structure. Grossly, lower density service areas are characterized by higher levels of capital per access line, per minutes of usage, or relative to other units of output. The BOCs are various as between themselves but the BOCs versus mid-cap and small LECs are quite disparate. On its face, where population, including businesses, is dense it is often true that the same capital can serve more users and vice versa. Rural LECs are disadvantaged on this score.

In fairness to the PCO, neither conceptualization nor measurement of capital costs is easy. In truth, it is difficult and vexing. The PCO's attempt to deal with the topic across an aggregation of large LECs must have introduced its own set of formidable problems. Nonetheless, over the last decade or so work in this area by some leading indexation specialists, including that of Laurits Christensen, shed much needed light in application to telecommunications. Regardless of any qualifying observation, though, the PCO oversimplified a stubbornly complex problem.

The PCO is quite explicit in enumeration of the conventions adopted for the Staff's TFP study of capital costs. Here we cite only the ones with more potential for controversy and material influence. The following is a capsule of the TFP's choices from among principal competing assumptions.

Assumptions	TFP Study's Choice
Benchmark capital stock	**Choice: Net book value** **Alternative: Replacement cost**
Asset categories	**Choice: One asset** **Alternative: Multiple classes**
Depreciation rates	**Choice: FCC-prescribed rates on book value** **Alternative: "Economic" rates**
Capital cost (or "rental" price)	**Choice: Flow of funds to capital*** **Alternative: Rate of return + depreciation + some tax rates**

*** Alternatively, this can be called the "residual earnings method," i.e., LEC revenues less labor and materials.**

In all of this, the FCC substantially sat in judgment of itself. Book (versus economic) values of assets, previously prescribed asset lives, and prescribed depreciation rates are the heart and soul of the *status quo* in capital recovery by the LECs. Residual earnings, i.e., after operating charges including depreciation, are circularly related. Given the growing phenomenon of stranded investment, we are entitled to ask if others must readily share this judgment of the Commission.

The PCO was ill at ease with itself on the matter of book value depreciation. Among other statements, Paragraph 65 said the following:

1. "We note that we are making only limited findings in this Order regarding depreciation ...

2. "We reach no decision in this Order on the possible use of "economic" depreciation methods in general...

3. "Nor are we suggesting that we plan to continue exercising our Section 220(b) prescription authority indefinitely ... The telecommunication industry is evolving, and this evolution may well require us to revise our prescription methods, or possibly discontinue depreciation rate prescriptions altogether."

In this case, later is not good enough. If capital cost has been estimated on the low-side, productivity and the X-Factor are estimated on the high side. If the PCO is to be genuinely pro-competitive, economic depreciation deserves a better hearing now.

What was the TFP's result regarding capital cost? Interestingly, as Total Plant in Service grew year-by-year 1986-1995, depreciation accruals (Column H, Chart D7, Appendix D in the TFP study) *were virtually stable 1987-92*. During these years, the TFP's measured Adjusted Depreciation Rate *fell* from 8.188% to 6.867% (Column I, Chart D7). In 1993-95 reversal occurred in some degree. Equally intriguing, Capital Rental Price (Column H, Chart D9), including depreciation, descended quite materially through the decade. Given that property income occupied the dominant place among input shares throughout the decade, a downward bias overall in cost results was built-in. If capital cost was understated, total costs were understated. The Staff estimates of TFP and the resultant X-Factor were correspondingly overstated.

CONCLUSION

The X-Factor is built around the idea of productivity. The FCC Staff's study, however, constitutes a convincing demonstration of just how multi-faceted that simple idea becomes in empirical practice. At the risk of belaboring the point, I will here repeat that RBOC gains in TFP for 1986-95 were inseparable from a dramatic change in physical output mix, namely, the surge in interstate calling. The source of this upsurge in demand was not dealt with by the Staff in its TFP analysis and not by the PCO elsewhere. With regard to cause of this change in mix of output, one can conjecture about the price elasticity of long distance service, but also income elasticity, the effect of the phenomenal spread of mobile phones, drift in sociologically rooted habits, etc. may well have had their respective shares in causation. Whatever else may be true, though, this much is unambiguous: The rural LECs do not have markets for interstate calling traffic comparable to that of the RBOCs. Thus, it is most unfair and not pro-competitive to force upon them the empirical value of an X-Factor derived from "productivity" gains keyed to an output mix their franchises simply do not share. It is no more and no less than a *non-sequitur* to ask rural LECs to beat the TFP content of an X-Factor founded upon recent history of service markets they do not have.

Other gaps in logic underlying the PCO's choice of an X-Factor played lesser, perhaps, but significant roles. The place of recognition of input prices in the X-Factor seems clear, but

whether or not they are a managerial handle and therefore have a place within the X-Factor has yet to be really argued. Debatable practice in measurement of capital cost was detailed above. Alternatives should be considered. For the reasons summarized here the FCC should grant Citizens' petition.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 5, 1997.

Dr. Victor L. Andrews

June 1997

PERSONAL HISTORY
VICTOR L. ANDREWS

Address: 4625 Jettridge Drive, N.W.
Atlanta, Georgia 30327-3542

Andrews Financial Associates: 4625 Jettridge Drive, N.W.
Atlanta, Georgia 30327-3542

Telephones:

Home: (404) 252-1923 FAX: (404) 256-6425
LD Home: (800) 451-7161

Age: 67

Educational History:

Bachelor of Arts, University of Chicago, 1951
Master of Arts, University of Chicago, 1953
Master of Business Administration, University of Chicago, 1954
Ph.D. in Industrial Economics, Massachusetts Institute of Technology, 1958

Employment History:

Assistant Professor of Finance, School of Industrial Management, Massachusetts Institute of Technology, 1958-61
Assistant Professor of Business Administration, Graduate School of Business Administration, Harvard University, 1961-65
Associate Professor of Business Administration, Graduate School of Business Administration, Harvard University, 1965-68
Mills Bee Lane Professor of Banking and Finance and Chairman, Department of Finance, Georgia State University, September, 1968-1993
Chairman Emeritus and Professor Emeritus of Finance, Department of Finance, Georgia State University, July 1, 1994
Chairman, CFO RoundTable, Georgia State University, 1993-
Director, Center for the Study of Regulated Industry, Georgia State University, 1984-1993

Other Business Associations:

President and Secretary, Andrews Financial Associates, Inc.
Director, Invesco Funds
Director, Southeastern Thrift and Bank Fund
Director, Sheffield Investment Companies

Offices in Professional Associations:

President, Financial Management Association, 1978-79, Member of the Executive Committee, 1971-79
Founding Editor of Financial Management, 1971-76
Vice President for Annual Meetings Program, Eastern Finance Association, 1972
Member of the Board of Directors of the Eastern Finance Association, 1972-75
Trustee, Financial Management Association, 1979-84

Executive Education:

Stonier Graduate School of Banking, 1971-1988
School of Banking of the South, 1972-74
Graduate School of Credit and Financial Management, 1965-69, 1975-82
Business of Banking School, 1976-78
Unilever, Ltd., 1976-77, 1979
Bank Administration Institute, 1979, 1980
First Alabama Bancshares, 1979-1982
SouthTrust Corporation 1979-
Atlanta Bar Association, 1981, 1982
Management Exchange/Public Utility Reports, 1981-1993
Bank South Corporation, 1983-
AT&T - Communications
Coca Cola USA Bottler Training
Southwestern Graduate School of Banking 1991-93
SunTrust Corporation 1986-93
Advanced Credit Executive Studies 1985-
Robert Morris Associates 1991
Columbia Gas System 1994

Service as Expert Witness:

Ad Valorem Tax:

1980 1979 Ad Valorem Tax Appeals of the Southern Railway Company and Affiliated Companies and the Family Lines System State Board of Equalization, State of Georgia

1981 1981 Ad Valorem Tax Appeal of the Southern Railway Company et al., from assessment by the Assessment Division, Tennessee Public Service Commission

1982 Michigan-Wisconsin Pipeline Company Ad Valorem Tax Appeal before the Iowa State Board of Tax Review, Docket No. 302 (Consultant)

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1995 Sonat, Inc. v. Alabama Department of Revenue, Circuit Court of Jefferson County, Alabama, CV 94-08568

Improper Accumulations of Surplus:

1969 Schenuit Rubber Company v. United States of America, U.S. District Court, Civil Action File No. 17579, District of Maryland

1970 Ostendorf-Morris Company v. United States of America, U.S. District Court, Civil Action No. C67-142, Northern District of Ohio

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1990 Media Central Inc. et. al. v. First American National Bank, U.S. District Court for the Eastern District of Tennessee, Civil Action File No. 1:88-464

1990 Timothy F. Finley, Trustee in Bankruptcy for Washington Manufacturing Co. et. al. v. Van E. Hill, Citicorp NA, et. al. in the U.S. Bankruptcy Court for the Middle District of Tennessee, Adversary Proceeding No. 390-0073A

Securities:

1985 McCauley v. Shearson/American Express, Inc., U.S. District Court, Western District of Virginia

1985 Brock, Paparelli, Davis v. Shearson/American Express Inc., U.S. District Court, Northern District of Georgia, Civil Action file Nos. C83-626A, C83-2635A

1986 Del Castillo v. Paine, Webber, Jackson, and Curtis, Inc. and Tom W. Alison, in the United States District Court for the Northern District of Georgia, Atlanta Division, Civil Action File No. C85-2410A

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1987 Ross v. William H. Mathis and Bear, Stearns and Company, Civil Action File No. C84-1309A, U.S. District Court for the Northern District of Georgia

1988 GIW Industries, Inc. v. Trevor, Stewart, Burton, and Jacobsen, Inc., United States District Court, Southern District of Georgia, CV 188-090

1988 Cherry v. Paine, Webber, and Alison, NASD Arbitration No. 88-00806

1988 N.L. Cooper v. Shearson/Lehman Bros., Inc. and D. Elliott Dahle, NASD Arbitration Case No. 8800138